

Margin Site Lesions After Sublobar Resection : Real-World Management and Implications for Clinical Decision-Making

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Introduction

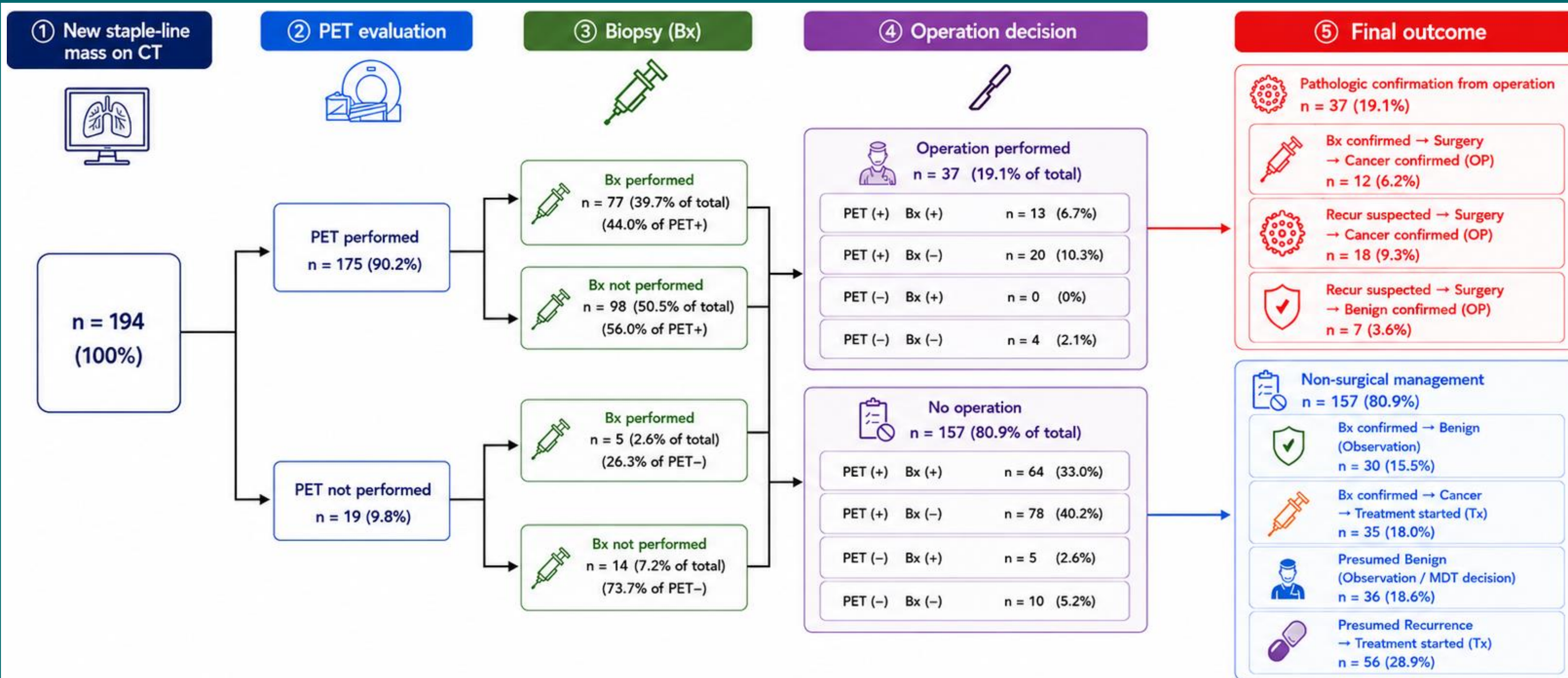
- Staple-line masses after sublobar resection pose a diagnostic challenge because postoperative inflammatory changes can mimic local recurrence.
- We investigated the diagnostic pathway, accuracy of FDG-PET, and factors associated with true recurrence in patients with suspected staple-line recurrence.

Methods

- We retrospectively reviewed **3,743 patients** with NSCLC who underwent sublobar resection between 2012 January and 2025 May, of whom **194 developed suspected staple-line recurrence** during follow-up.
- Diagnostic work-up and management, including PET, biopsy, and treatment, were evaluated, and factors associated with pathologically or clinically confirmed recurrence were analyzed.

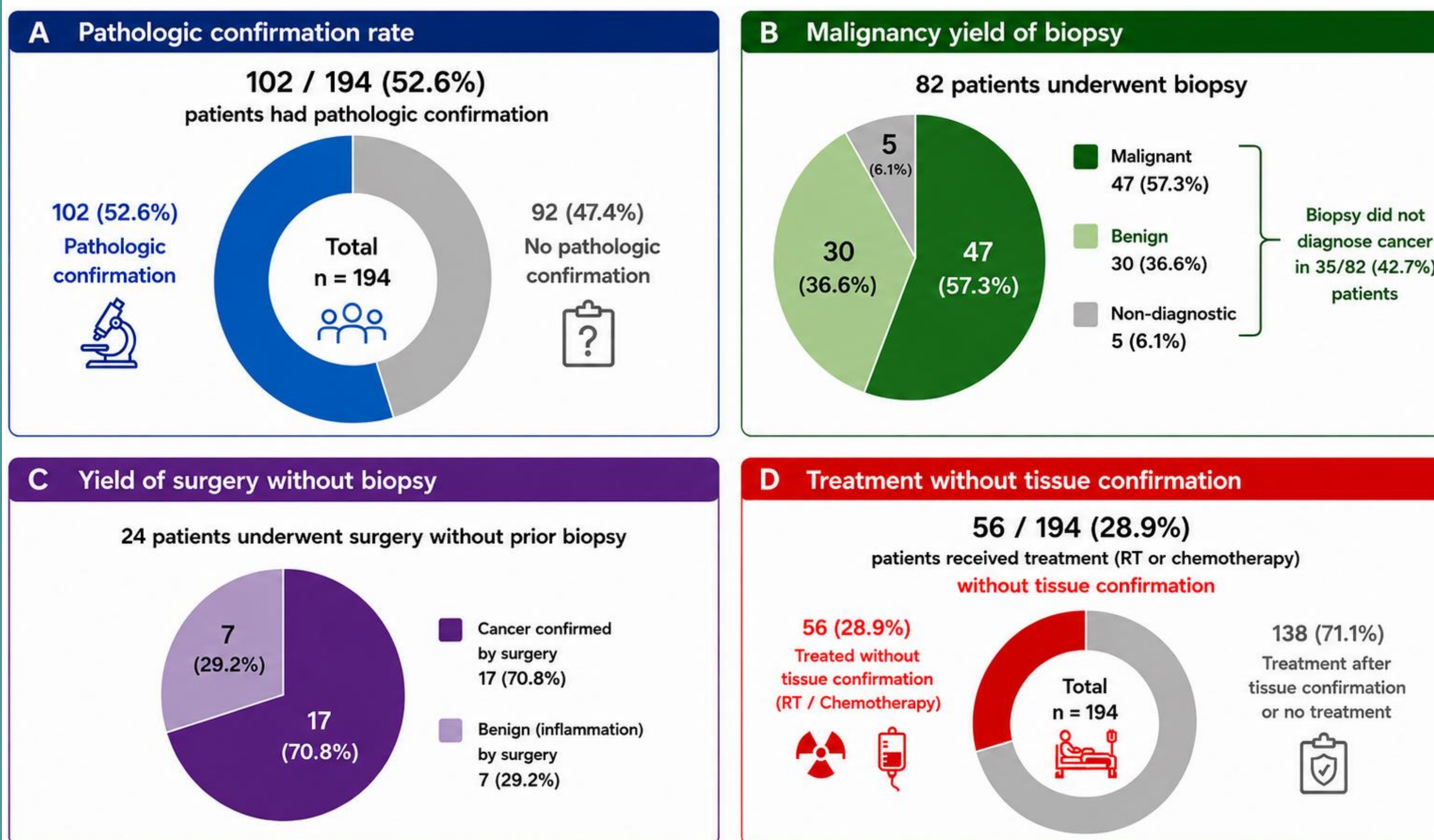
Variable	Total (n = 194)	Variable	Total (n = 194)
Age (years), median (IQR)	65.0 (60.0–70.0)	Resection margin, cm, median (IQR)	0.85 (0.3–1.7)
Sex, Male	108 (55.7%)	No. of resected lymph nodes, median (IQR)	16 (8–22)
Smoking history (ever)	93 (47.9%)	Extranodal invasion	2 (1.0)
The number of comorbidities		Pathologic T stage	
0-1	119 (61.3%)	Tis	4 (2.1)
≥ 2	75 (38.7%)	T1a	33 (17.0)
FEV1, % predicted, median (IQR)	86.0 (75.0–96.2)	T1b	77 (39.7)
DLCO, % predicted, median (IQR)	81.0 (67.0–93.0)	T1c	53 (27.3)
Type of resection		T2a	16 (8.2)
Wedge resection	92 (47.4%)	T2b	4 (2.1)
Segmentectomy	102 (52.6%)	T3	6 (3.1)
Histologic structure, n (%)		T4	1 (0.5)
ADC	167 (86.1%)	Pathologic N stage	
SqCC	17 (8.8%)	N0	178 (91.8)
Others	10 (5.2%)	N1	5 (2.6)
Pathological tumor size	18.0 (12.0–25.0)	N2a	10 (5.2)
Follow-up duration, days, median (IQR)	2141 (1567–3538)	N2b	1 (0.5)
Postoperative adjuvant therapy	16 (8.2)		

Results 1 : Clinical Management Pathway of Suspected Staple-line Mass after Sublobar Resection (n=194)



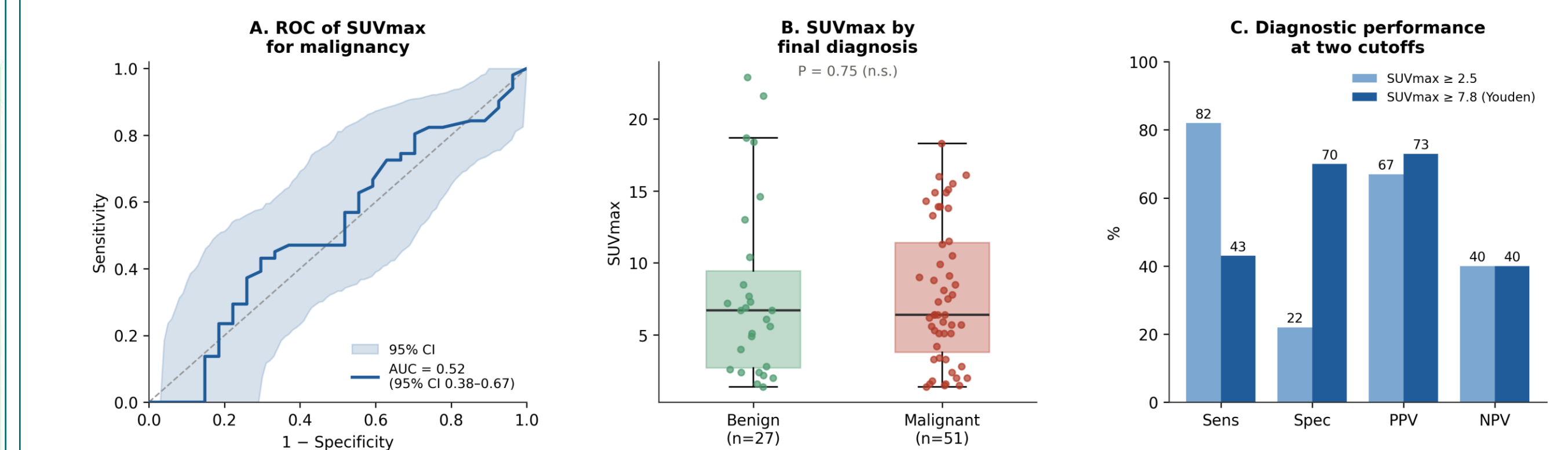
A newly detected staple-line mass after sublobar resection leads to heterogeneous diagnostic and therapeutic pathways.

Results 2 : Diagnostic yield



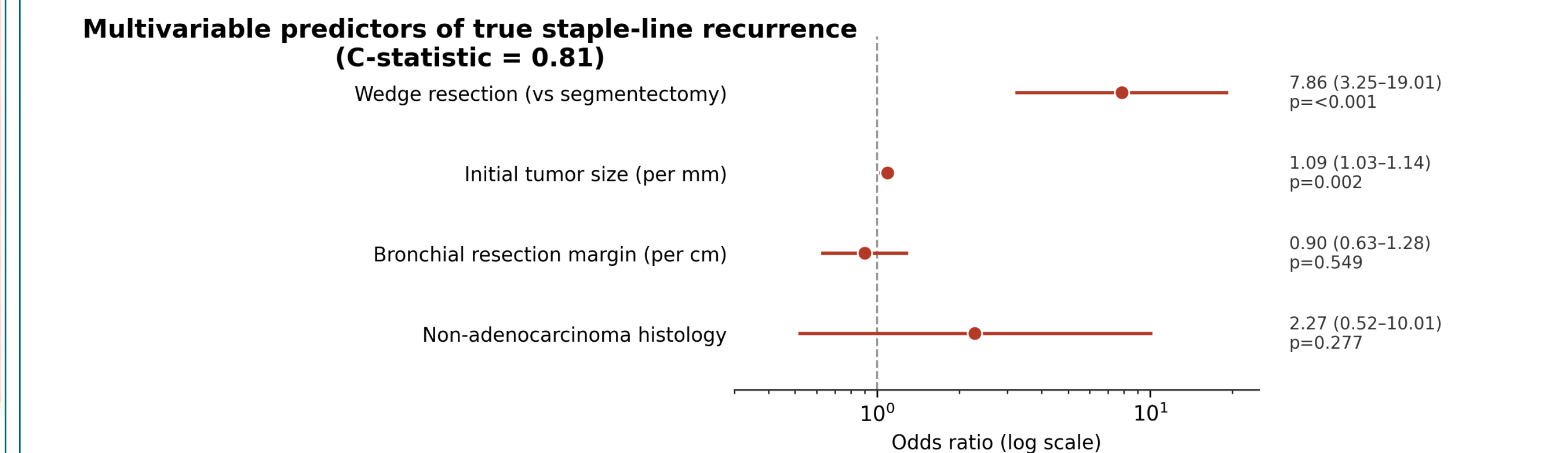
Only approximately half of suspected staple-line lesions underwent pathologic confirmation, while nearly one-third of patients received treatment without tissue confirmation.

Results 3 : Limited Diagnostic Performance of FDG-PET



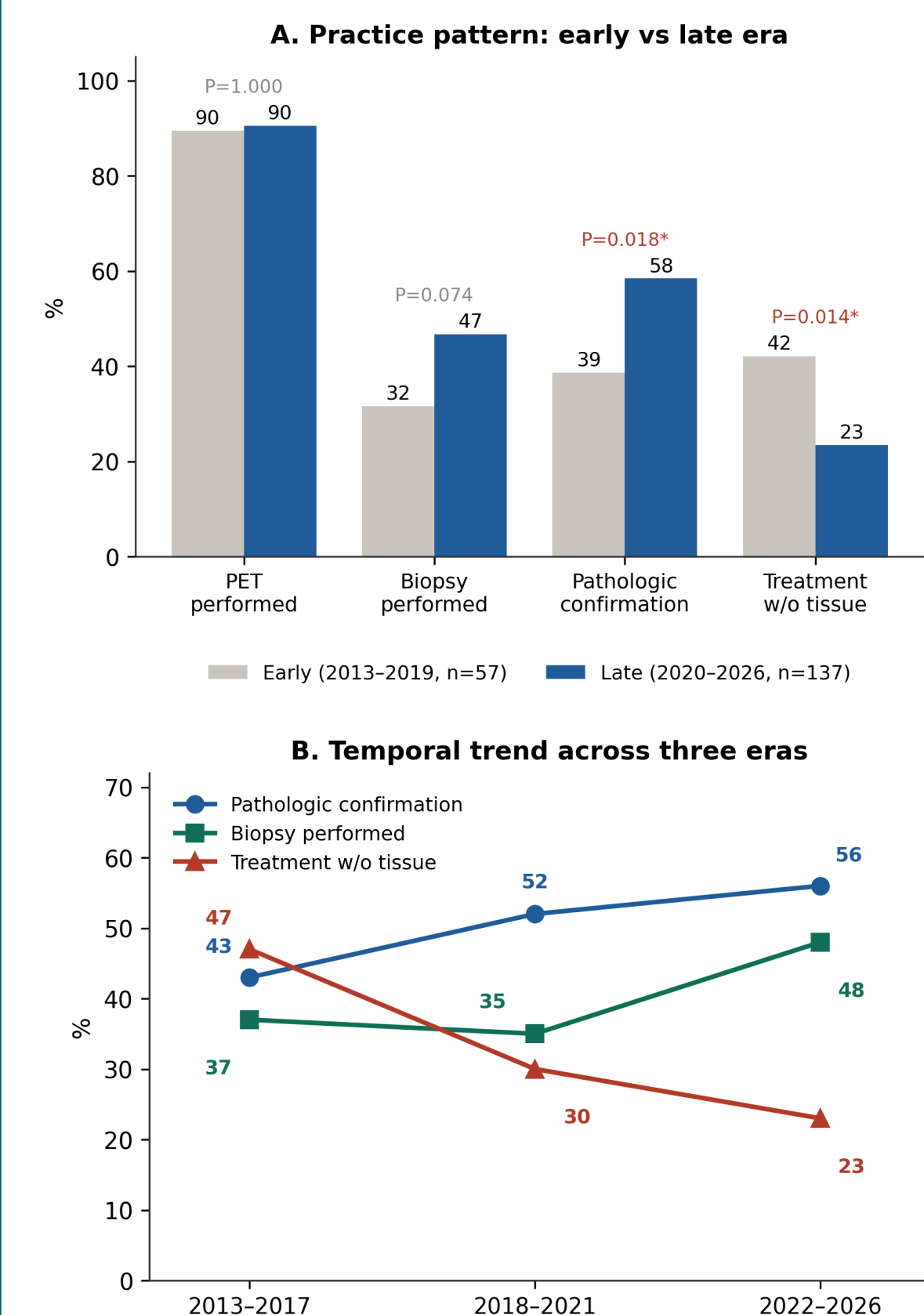
Although FDG uptake appeared to influence the decision to perform biopsy, SUVmax showed essentially no ability to discriminate malignancy from benign postoperative changes.

Results 4 : Predictors of True Recurrence (Multivariable Cox)



True recurrence was associated with characteristics of the original tumor and operation—particularly **wedge resection** and larger **tumor size**.

Results 5 : Practice has improved over time



Clinical practice has progressively shifted toward greater tissue confirmation and less empiric treatment, although a substantial diagnostic gap remains.

Conclusion

- Staple-line lesions after sublobar resection remain a diagnostic challenge, with tissue confirmation obtained in only about half of patients.
- SUVmax alone could not reliably distinguish recurrence from benign postoperative changes.
- Tissue confirmation should therefore be strongly pursued whenever feasible before initiating treatment for suspected recurrence.**

AI use Disclosure

OpenAI ChatGPT was used for language editing and figure refinement. All scientific content and conclusions were independently reviewed and verified by the author.